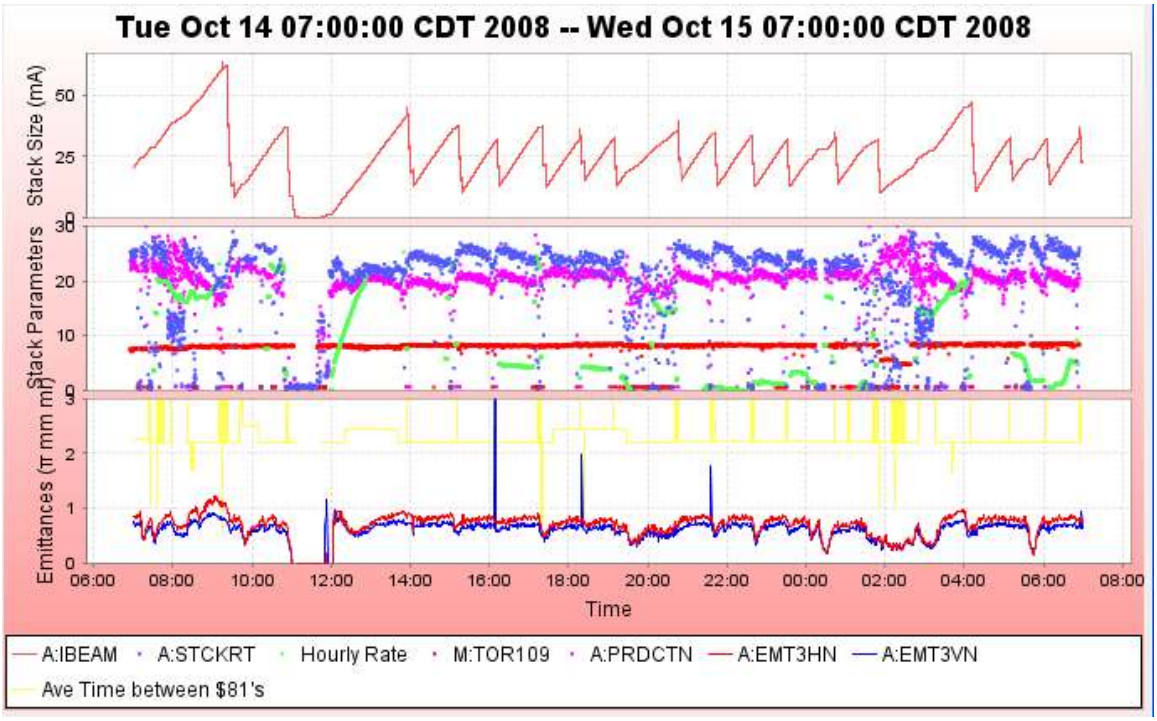
2008-10-15 Wednesday Morning Notes

Wednesday, October 15, 2008
7:15 AM

Stacking

- Stacking Performance
  - Peak Stack rate: 23.24 mA at Tue Oct 14 15:04:06 CDT 2008
  - Average Production: 18.80 e-6/proton
  - The peak stacking hour was artificially lower overnight because we only stacked 30mA between transfers, which shortened the time between transfers to less than one hour.
- Took time yesterday
  - A:IKIK database change tested to compensate for the fact that module #2 and #3 were changed to a 100KV supply. This appeared to work and we switched to a remote reference.
  - A:QDF
    - A:QDF came back 0.45A higher after the shutdown, compared to before. This had required some additional tuning on turn-on.
    - We tried changing the CAMAC 184, which sends the setting to the power supply. The card is in Pbar crate $52, slot 13.
    - With the spare card in place, we could only run the supply at 0.8A. We normally run this supply a little under 250A.
    - We got the same results with a second spare.
    - So, we put the original card back in place and knobbed A:QDF to have to desired output current, put the tune shunts and bend bus values back to their settings from before the shutdown, then cycled busses.
    - The result was that the Accumulator tune was way off.
    - We then had to correct the energy match between Debuncher and Accumulator.
  - Rupe discovered the problem with the Camac 184 cards. It turns out that the 184 card for A:QDF has a specially modified PAL. Rupe has put a card in place in crate 52, slot 12 for us to use. **The Run Co approved this card swap for today; however, we want to wait for a period of downtime to make the swap as we don't want to interrupt stacking (have to turn off and cycle A:QDF after the change).**
- Evening we had some problems
  - Went to "reverse interleaving" mode, which is stacking-only $29s and NuMI+stacking $23s. This is very bad for Pbar
  - The Debuncher bunch rotation phase is about 20-deg different between the $29s and $23s.
  - If the Debuncher phase is off, more beam is outside the DRF capture region, this drives up the power in the Debuncher cooling systems, and Debuncher cooling TWTs trip off. As a result, we have to reduce the power in those systems to compensate, hurting stacking.
  - When we went to the mixed $29 and $23 mode, the DRF1 phase had to be set to a compromise position and the cooling reduced.
  - When "reverse interleaving" mode was done, the cooling power was not restored for a few hours, resulting in reduced stacking.
- Stacking was restored to more normal levels on the owl shift.



Transfers

- We ran an new mode starting yesterday afternoon where we stack to 30mA between transfers instead of 40mA. Efficiency is up a bit, and time between transfers is on the order of 45 minutes.
- Unstacked 463mA in 43 transfers over 18 sets.
  - ACC to RR efficiency was 95.6%.
- There was an energy mis-match between the Accumulator and MI
  - Part of this was corrected by fixing the energy alignment in the Accumulator.
  - Also had a small change in the sequencer to compensate for the rest.

Column 1 Number_0_Pbar	Column 4 Number_3_Transfer Time		Column 21 Number_20_A:IB	Column 22 Number_21_A:IB	Unstacked (mA)	Column 23 Number_22_R:BE	Column 24 Number_23_R:BE	Stashed	Acc to RR Eff	Column 27 Number_26_MI DCCT	Column 28 Number_27_MI Befor	Acc to MI Eff	Acc to MI2 Eff	Transfers	Sets
	Totals =>	7:00:00 AM			463.90			443.86	95.68%	454.50	453.57	97.97%	97.77%	43	18
9585	Wednesday, October 15, 2008	6:57:09 AM	33.08	14.93	19.28	82.55	100.98	18.44	95.65%	18.74	18.96	97.21%	98.32%	2	1
9584	Wednesday, October 15, 2008	6:05:34 AM	32.04	13.19	20.01	63.54	82.69	19.19	95.92%	19.63	19.57	98.11%	97.81%	2	1
9583	Wednesday, October 15, 2008	5:09:46 AM	32.41	14.99	18.58	46.01	63.65	17.67	95.09%	17.98	17.86	96.76%	96.08%	2	1
9582	Wednesday, October 15, 2008	4:10:58 AM	46.54	10.57	37.87	9.71	46.11	36.45	96.25%	37.17	36.73	98.15%	97.00%	3	1
9581	Wednesday, October 15, 2008	1:49:43 AM	31.59	10.16	22.08	330.99	352.27	21.39	96.88%	21.52	21.79	97.45%	98.68%	2	1
9580	Wednesday, October 15, 2008	12:44:43 AM	32.16	13.69	19.47	313.33	332.01	18.74	96.26%	19.23	19.20	98.74%	98.58%	2	1
9579	Tuesday, October 14, 2008	11:32:30 PM	31.82	12.50	20.08	295.10	314.19	19.17	95.47%	19.71	19.73	98.17%	98.28%	2	1
9578	Tuesday, October 14, 2008	10:38:23 PM	33.33	12.93	20.96	275.88	295.87	20.10	95.90%	20.38	20.59	97.27%	98.27%	2	1
9577	Tuesday, October 14, 2008	9:42:20 PM	34.47	12.71	22.83	254.50	276.37	21.92	96.04%	22.45	22.56	98.36%	98.82%	2	1
9576	Tuesday, October 14, 2008	8:47:29 PM	36.23	15.04	22.31	233.86	255.06	21.24	95.20%	21.89	21.64	98.12%	96.97%	2	1
9575	Tuesday, October 14, 2008	7:09:01 PM	32.09	12.52	20.71	214.84	234.56	19.78	95.49%	20.30	20.14	98.02%	97.27%	2	1
9574	Tuesday, October 14, 2008	6:19:56 PM	33.01	14.88	19.28	196.87	215.21	18.38	95.32%	18.73	18.84	97.18%	97.75%	2	1
9573	Tuesday, October 14, 2008	5:21:19 PM	37.04	11.84	26.18	171.81	197.16	25.33	96.75%	25.65	25.91	97.99%	98.96%	2	1
9572	Tuesday, October 14, 2008	4:11:20 PM	31.45	12.67	19.87	153.10	172.16	19.05	95.85%	19.66	19.49	98.94%	98.06%	2	1
9571	Tuesday, October 14, 2008	3:12:28 PM	37.41	10.32	29.44	125.19	153.38	28.29	96.09%	28.65	28.88	97.31%	98.11%	3	1
9570	Tuesday, October 14, 2008	1:57:27 PM	42.24	12.44	32.02	95.19	125.42	30.24	94.42%	31.58	31.60	98.62%	98.67%	3	1
9569	Tuesday, October 14, 2008	10:53:59 AM	36.84	0.82	36.05	60.59	95.60	35.20	97.63%	35.64	34.93	98.86%	96.89%	4	1
9568	Tuesday, October 14, 2008	9:21:24 AM	61.65	8.29	56.88	7.71	60.80	53.29	93.69%	55.57	55.16	97.70%	96.98%	4	1

Studies

- None

Requests

- None at this point.
- Have our stacking meeting today and will present requests at that time.
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The Numbers

- Paul's Numbers
  - Stacking in last 24 hours
  - Most in an hour: 23.24 mA at Tue Oct 14 15:04:06 CDT 2008
  - Best: 27.01 mA on 03-Jun-08
  - Average Production 18.80 e-6/proton Best: 25.41 e-6/proton on 01/30/2008
  - Average Protons on Target 6.33 e12 Best: 8.77 e12 on 07/24/2007
  - Largest Stack .00 mA Best: 313.58 mA on 02/18/2008
- Al's Numbers
  - Stacking
    - Pbars stacked: 457.47 E10
    - Time stacking: 23.76 Hr
    - Average stacking rate: 19.25 E10/Hr

- Uptime
  - Number of pulses while in stacking mode: 0
  - Number of pulses with beam: 0
  - Fraction of up pulses was: ☐%

- The uptime's effect on the stacking numbers
  - Corrected time stacking: ☐ Hr
  - Possible average stacking rate: 00.00 E10/Hr
  - Could have stacked: ☐ E10/Hr

- Recycler Transfers
  - Pbars sent to the Recycler: 455.61 E10
  - Number of transfers : 42
  - Number of transfer sets: 18
  - Average Number of transfer per set: 2.33
  - Time taken to shoot including reverse proton tuneup: 00.24 Hr
  - Transfer efficiency: 94.66%

- Other Info
  - Average POT : ☐ E12
  - Average production: 0.00 pbars/E6 protons